Drinking Water Surveillance Program

METRO TORONTO (R.L. CLARK) WATER TREATMENT PLANT

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METRO TORONTO (R.L. CLARK) WATER TREATMENT PLANT

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1988

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

METRO TORONTO (R.L. CLARK) WATER TREATMENT PLANT
1988 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The Metro Toronto (R.L. Clark) Treatment Plant is a conventional treatment plant that treats water from Lake Ontario. The process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. This plant has a design capacity of 655 x 1000m3/day, and in conjunction with the R.C. Harris and Easterly plants, serves a population of approximately 2,333,000 people.

Water samples from the raw and treated sites and from one site in the distribution system were taken on a monthly basis. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Volatiles). Specific Pesticides and Chlorophenols were analysed in June and November only.

A summary of results is shown in Table 1.

Inorganic and Physical parameters were all below any applicable health related ODWOs.

Of a total of approximately 110 Organic parameters tested for on a monthly basis, none exceeded health related guidelines.

During 1988 the DWSP sampling results indicated that the R.L. Clark Water Treatment Plant produced a good quality water at the plant and this quality was maintained in the distribution system.

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE BY SCAN

SCAN	RAW			TREATED			SITE 1		
	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	44	43	97	42	6	14	47	12	25
CHEMISTRY (FLD)	36	36	100	72	72	100	91	91	100
CHEMISTRY (LAB)	245	202	82	225	165	73	360	303	84
METALS	288	157	54	264	129	48	470	261	55
CHLOROAROMATICS	168	0	0	154	0	0	140	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.
PAH	204	0	0	187	0	0	.	.	.
PESTICIDES & PCB	396	0	0	362	0	0	330	0	0
PHENOLICS	12	5	41	11	1	9	.	.	.
SPECIFIC PESTICIDES	56	0	0	56	0	0	0	0	0
VOLATILES	287	0	0	286	41	14	258	38	14
TOTAL	1748	443		1671	414		1696	705	

NO HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

METRO TORONTO (R. L. CLARK) WATER TREATMENT PLANT 1988 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The DWSP was initiated at the R. L. Clark Water Treatment Plant in January of 1986. Annual reports were published for 1986 (ISBN 0-7729-2551-8) and 1987 (ISSN 0839-8976).

This report contains information and results for 1988.

PLANT DESCRIPTION

The Metro Toronto (R.L. Clark) Water Treatment Plant is a conventional treatment plant which treats water from Lake Ontario. The process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. Superchlorination is used for disinfection and for taste and odour control. Sulphur

dioxide is used as a dechlorinator and ammoniation is used to produce a long-lasting chloramine residual in the distribution system. This plant has a rated capacity of 655 x 1000m3/day and daily flows on sampling days ranged from 384 x 1000m3/day to 700 x 1000m3/day. R.L. Clark in conjunction with the R.C. Harris and Easterly plants (and the Toronto Island plant during the summer months), serves a population of approximately 2,333,000 people.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

METHODS

Water samples were obtained from three DWSP approved locations;

i) Plant Raw - The water originated from the raw water wetwell prior to chlorination and was sampled through a copper sample line. The sample tap is located near the wetwell.

ii) Plant Treated - The water originated from the reservoir after addition of all treatment chemicals and was sampled through a copper sample line. The sample tap is located near the highlift pumps.

iii) Distribution System - Site 1 - This house is approximately 5.5 kilometers from the plant. Water was sampled through copper lines from the kitchen sink tap.

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

At the distribution system location two types of samples were obtained: a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples are used to make an assessment of the amount by which the levels of inorganic compounds and metals may be changed on standing, due to leaching from (or deposition on), the plumbing system. The only analyses carried out on these samples therefore, are General Chemistry and Metals. The free flow sample represented fresh water from the distribution main that had been flowing at the sample tap for five minutes before being sampled.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. The retention time was calculated by dividing the volume of water between the two sampling points by the sample day flow. For example, if it was determined that the retention time within the plant was five hours then there would be a five hour interval between the raw and treated sample. Similarly, if it was estimated that it took approximately one day for the water to travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

R.L. CLARK WATER TREATMENT PLANT

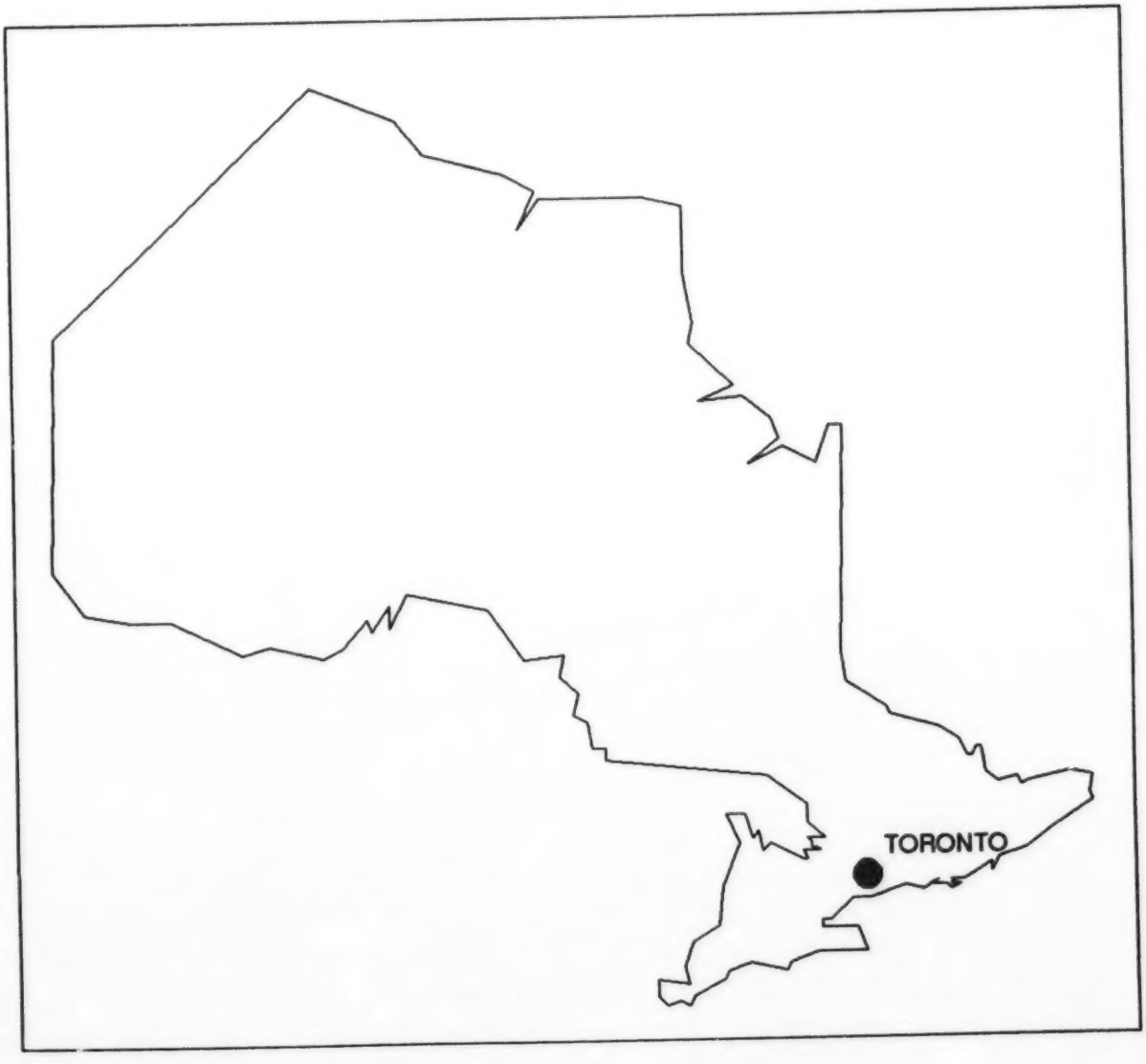

FIGURE 2

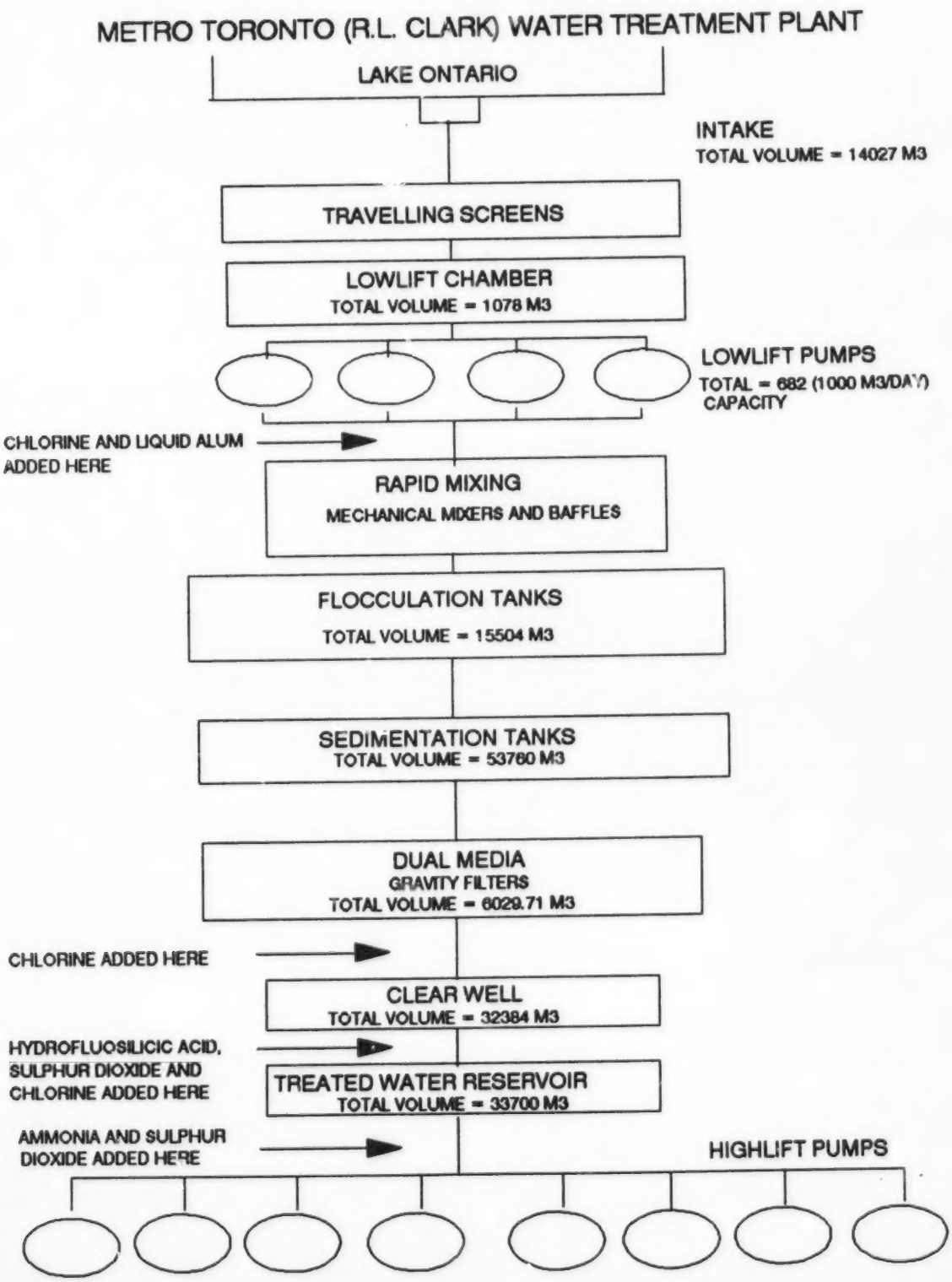
METRO TORONTO (R.L. CLARK) WATER TREATMENT PLANT
LAKE ONTARIO
INTAKE
TOTAL VOLUME = 14027 M3
TRAVELLING SCREENS
LOWLIFT CHAMBER
TOTAL VOLUME = 1078 M3
LOWLIFT PUMPS
TOTAL = 682 (1000 M3/DAY) CAPACITY
CHLORINE AND LIQUID ALUM ADDED HERE
RAPID MIXING
MECHANICAL MIXERS AND BAFFLES
FLOCCULATION TANKS
TOTAL VOLUME = 15504 M3
SEDIMENTATION TANKS
TOTAL VOLUME = 53760 M3
DUAL MEDIA
GRAVITY FILTERS
TOTAL VOLUME = 6029.71 M3
CHLORINE ADDED HERE
CLEAR WELL
TOTAL VOLUME = 32384 M3
HYDROFLUOSILICIC ACID, SULPHUR DIOXIDE AND CHLORINE ADDED HERE
TREATED WATER RESERVOIR
TOTAL VOLUME = 33700 M3
AMMONIA AND SULPHUR DIOXIDE ADDED HERE
HIGHLIFT PUMPS

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

METRO TORONTO (R.L. CLARK) WATER TREATMENT PLANT

LOCATION:	45 23RD STREET TORONTO, ONTARIO M8V 3M6 (416-392-2905)
SOURCE:	RAW WATER SOURCE - LAKE ONTARIO
RATED CAPACITY:	655 (1000 M3/DAY)
OPERATION:	MUNICIPAL
PLANT SUPERINTENDENT:	A. VUKOSAVLIJEVIC
MINISTRY REGION:	CENTRAL
DISTRICT OFFICER:	J. MILLS

MUNICIPALITY SERVED	POPULATION
CITY OF TORONTO	615,000
CITY OF ETOBICOKE	298,490
CITY OF NORTH YORK	556,308
CITY OF SCARBOROUGH	461,957
CITY OF YORK	133,856
BOROUGH OF EAST YORK	97,679
REGION OF YORK (SOUTH)	170,000

Stringent DWSP sampling protocols were followed to ensure that all samples were taken in a uniform manner.

Sample day flow, treatment chemical dosages and Field Chemistry measurements such as Turbidity, Chlorine Residuals, pH and Temperature were recorded on the day of sampling and were entered onto the DWSP data base as submitted.

RESULTS

The Metro Toronto (R.L. Clark) Water Treatment Plant was sampled for approximately 160 parameters on a monthly basis. One site from the distribution system was not sampled in May and December.

The Specific Pesticides and Chlorophenol scans were sampled in June and November only. Polynuclear Aromatic Hydrocarbons and Phenolics are only analysed in the raw and treated water at the plant. As a result of an unforeseen emergency the laboratory capacity was exceeded and anlysis for volatiles could not be carried out when the samples were received. Since analysis for volatiles is no longer valid after four weeks of storage, volatile results for February are not available.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analysed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analysed in the DWSP.

Associated guidelines and detection limits are also supplied in Table 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN

0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters, which are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS) recently published (ISBN 0-7729-4461-X) by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Although some of the parameters measured on DWSP may be present in the raw and treated water as a result of pollution, many of the compounds detected are naturally occuring or are treatment by-products.

Plant operational personnel address occurrences of taste and odour or biological water quality parameters. The DWSP does not assess these aspects of the water supply.

As stated under Results, traces do not indicate quantifiable values, as defined by established MOE laboratory analytical reporting protocols. While they can be useful in trend analysis or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels, the occasional finding of a trace level of a contaminant is not considered to be significant. **DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CARRIED OUT ON POSITIVE RESULTS.**

Bacteriology

Positive results for the Bacteriology scan were present six times in the treated water and twelve times in the distribution system Site 1 water. In most cases the positive parameters were Standard Plate Count, Total Coliform and/or Total Coliform Background. The presence/absence (P.A.) test determined Coliform bacteria to be present within 48 hours in the August sample from distribution system Site 1.

Standard Plate Count results were all very low, indicating that good microbiological quality was being maintained in the distribution system.

Guidelines for bacteriological sampling and testing of a supply are developed to maintain a proper supervision of its bacteriological quality; the routine monitoring program usually requires the taking of multiple samples in a given system. Full interpretation of bacteriological quality cannot be made on the basis of single samples. Further, bacteriological limits were develcped in acknowledgement that the presence of coliforms may be detected due to their non-uniform distribution throughout the distribution system and the fact that their enumeration is subject to considerable variation. For these reasons, the occasional finding of low numbers of coliform organisms is not unexpected. Routine bacteriological monitoring, as outlined in the ODWOs is

carried out by the operating authority.

Inorganic and Physical Parameters

Laboratory and Field Chemistry

The results for Laboratory Chemistry and Field Chemistry scans were all below applicable health related ODWOs.

The Langelier Index is used extensively in estimating the corrosion potential of water. An increasingly negative index indicates the increasing possibility of corrosion. It is considered sound engineering practice to maintain a slightly positive Langelier Index. The Langelier Index for the R.L. Clark water is consistently in the positive range with one exception in August.

The Total Ammonium levels are high, not as a result of naturally occurring ammonia (eg. from sewage pollution) but from the anhydrous ammonia added in the treatment process. The ammonia is added after the post-chlorination stage to provide a long lasting combined chlorine (chloramine) residual in the distribution system. Substantial free chlorine residuals were measured in treated water except in April, May, August, September and December. Table 3 indicates that anhydrous ammonia was not added in January, February, June or November. While the European Economic Community has an aesthetic guideline of .05 mg/L, the Maximum Admissable Concentration is .50 mg/L and is set as a result of the concern

for potential sewage pollution and its detection.

As part of the treatment plant process, hydrofluosilicic acid is added to the treated water (Table 3). Where fluoridation is practiced, the Fluoride concentration recommended in the ODWO is 1.2 mg/L, plus or minus 0.2 mg/L. This level was maintained.

The ODWO recommend a hardness level of between 80 and 100 mg/L as calcium carbonate for domestic waters, to provide an acceptable balance between corrosion and incrustation. Water supplies with a hardness greater than 200 mg/L are considered poor and would possess a tendency to form scale deposits and result in excessive soap consumption. The hardness levels for the R.L. Clark water range from 127 to 145 mg/L.

Metals

The results reported for the Metals scan were below any health-related ODWOs.

Copper and Iron levels were lower in the treated water as compared to the raw water. This is a result of the treatment process. The addition of Alum as a coagulant to the raw water and the resulting coagulation/settling process has been shown to reduce the levels of most metals.

Higher levels of Copper and Iron were detected in all distribution system samples compared to the treated water. This indicates that these metals were possibly leached from the pipes within the distribution system.

Elevated levels of Copper and Zinc were detected in the standing samples compared to the free flow distribution samples thus, indicating that small quantities of these metals were leached from the household plumbing as the water stood overnight.

Although the Langelier Index indicates minimal potential for corrosion some metals will be leached in standing samples in most supplies.

At present, there is no evidence that Aluminum is physiologically harmful and a health limit for drinking water has not been specified. The measure of residual Aluminum in the treated water is important to indicate the efficiency of the treatment process. A useful guideline is to maintain a residual below 0.1 mg/L as Al in the water leaving the plant to avoid problems in the distribution system. Aluminum values exceeded the ODWO operational guideline twice in the treated water. The Municipality of Toronto Department of Works in conjunction with the Ministry of the Environment is currently studying the issue of Aluminum in drinking water, with the intent of establishing a comparable method of analysis for aluminum residual and to optimize the amount of alum

added in the treatment process.

Organic Parameters

Chloroaromatics

The results of the Chloroaromatics scan showed that no chloroaromatices were detected.

Chlorophenols

The results of the Chlorophenols scan showed that no Chlorophenols were detected.

Pesticides and PCB (Polychlorinated Biphenyl)

The results of the Pesticides and PCB scan showed that no PCBs were detected and that two pesticides were detected:

Alpha BHC

Lindane

There are several isomers of BHC (Benzene Hexachloride); gamma BHC is the active ingredient of the pesticide Lindane, while Alpha BHC is the predominant isomer found in surface waters from the Great Lakes Basin DWSP.

Alpha BHC was detected at trace levels, nine times in the raw water, nine times in the treated water and eight times in the distribution system Site 1 water.

Lindane was detected at trace levels, three times in the raw water, four times in the treated water and four times in the distribution system Site 1 water.

Specific Pesticides

Results of the Specific Pesticides scan showed that no specific pesticides were detected.

Phenolics

The maximum desirable concentration of phenolic substances in drinking water is 2.0 ug/L. This limit has been set to prevent the occurrence of undesirable tastes and odours, particularly in chlorinated water. Phenolics were detected in the May, June, July, September and December raw water at 1.4, 1.0, 1.4, 1.4 and 1.0 ug/L. They were detected at 1.4 ug/L in the September treated water sample. Phenolics were detected at trace levels, six times in the raw water and nine times in the treated water. Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes.

Polynuclear Aromatic Hydrocarbons (PAHs)

Results of the PAH scan shows that no PAHs were detected.

Volatiles

The results of the Volatiles scan showed that nine parameters,

other than Trihalomethanes(THMs), were detected:

Benzene

Toluene

Ethylbenzene

Meta & Para-Xylene

Ortho-Xylene

Styrene

Methylene Chloride (Dichloromethane)

Carbon Tetrachloride

Tetrachloroethylene

Benzene was detected at trace levels, twice in the treated water sample.

Toluene was detected at trace levels, once in the raw water, four times in the treated water and twice in the distribution system Site 1 water. The detection of toluene at low, trace levels is a laboratory artifact derived from the analytical methodology. The purge-and-trap analytical technique depends on the purging of the volatile organics in the water sample with helium gas onto a Tenax trapping column. The volatile materials are subsequently thermally desorbed, separated and quantified. Tenax, a toluene-like polymeric material, tends to decompose sporadically upon heating into toluene and other aromatic componenets (ethylbenzene and xylene) giving instrument blanks in the order of 0.05 ug/L.

The detected trace levels of Styrene are also considered to be laboratory artifacts due to the outgassing of monomeric styrene from the polystyrene shipping containers. The sporadic background levels from this source are in the order of 0.05 ug/L.
Ethylbenzene was detected at trace levels, three times in the raw water, ten times in the treated water and three times in the distribution system Site 1 water.

Para and Meta-Xylene are analysed as the combined xylene and reported as meta-xylene. Meta-Xylene was detected at trace levels, twice in the treated water.

Ortho-Xylene was detected at trace levels, twice in the treated water.

These volatiles are typically found on an occasional basis at other water supplies included on the DWSP usually at trace levels.

Methylene Chloride was detected at a trace level, once in the distribution system Site 1 water.

Carbon tetrachloride was detected at trace levels, twice in the treated water and once in the distribution system Site 1 water.

Tetrachloroethylene was detected at a trace level, once in the raw water.

THMs are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs in drinking water are comprised of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs.

Chloroform, Chlorodibromomethane, Dichlorobromomethane and Total THMs were always detected in the treated waters. Chloroform was detected at trace levels, four times in the raw water. Bromoform was detected, at trace levels ten times in the treated water and nine times in the distribution system Site 1 water. All THM occurrences, ranging from 15.8 ug/L to 43.15 ug/L, were well below the ODWO of 350 ug/L for Total THMs.

THMs were not detected in the October treated water sample, the same sample did not have the added amount of fluoride, indicating that in fact for the volatile scan a raw water sample was substituted in error for a treated water, thus the 'NSS' not suitable sample remark.

Comparison with the results of analyses from the DWSP in 1986 and 1987 shows that the raw and treated water quality to present has remained consistent at the R. L. Clark Water Treatment Plant.

CONCLUSIONS

The Metro Toronto (R.L. Clark) Water Treatment Plant for the sample year of 1988 produced a good quality water at the plant as assessed by the results for parameters analysed in DWSP and this quality was maintained in the distribution system.

No health related guidelines, for organic or inorganic parameters, were exceeded between 1986 and 1988.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) SAMPLE DAY CONDITIO 1988

	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)					
			PRE-CHLORINATION	COAGULATION	POST-CHLORINATION	FLUORIDATION	DECHLORINATION	CHLORAMINATION
			CHLORINE	ALUM LIQUID	CHLORINE	HYDROFLUOSILICIC ACID	SULPHUR DIOXIDE	AMMONIUM ANHYDROUS
DATE	RETENTION TIME(HRS)	FLOW (1000 M3)						
JAN 19	7.5	484.0	01.51	03.02	00.60	01.01	00.39	.
FEB 16	7.5	424.0	00.79	03.02	02.52	01.01	01.70	.
MAR 21	7.4	485.0	00.79	05.05	02.52	01.01	01.20	00.20
APR 19	7.1	534.0	00.79	03.02	02.02	01.01	01.20	00.20
MAY 17	6.2	573.0	00.79	05.05	02.02	01.20	01.01	00.20
JUN 21	5.3	700.0	01.51	10.09	01.51	01.01	01.39	.
JUL 19	7.5	494.0	01.51	07.05	01.70	00.97	01.07	00.20
AUG 16	7.0	518.0	00.79	03.02	02.02	01.01	00.69	00.20
SEP 20	7.7	456.0	00.79	03.02	00.79	00.82	00.20	00.20
OCT 18	7.5	481.0	00.79	03.02	00.69	00.97	00.20	00.20
NOV 22	9.6	384.0	00.79	05.05	00.69	00.97	00.39	.
DEC 12	7.5	467.0	01.51	03.02	00.79	01.14	01.20	00.20

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	AEROMONAS SP	.	.	.	.	.	.	2	0	0
	E. COLI P/A	.	.	.	.	.	.	2	0	0
	FECAL COLIFORM MF	12	11	0	.	.	.	.	.	.
	FECAL COLIFORM	.	.	.	.	.	.	2	0	0
	STANDRD PLATE CNT MF	8	8	0	11	3	0	10	8	0
	P/A BOTTLE	.	.	.	8	0	0	7	2	0
	STAPH AUREUS	.	.	.	.	.	.	2	0	0
	COLIFORM	.	.	.	.	.	.	2	1	0
	TOTAL COLIFORM MF	12	12	0	11	0	0	10	0	0
	T COLIFORM BCKGRD MF	12	12	0	12	3	0	10	1	0
*TOTAL SCAN BACTERIOLOGICAL		44	43	0	42	6	0	47	12	0
*TOTAL GROUP BACTERIOLOGICAL		44	43	0	42	6	0	47	12	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	12	12	0	13	13	0
	FLD CHLORINE FREE	.	.	.	12	12	0	10	10	0
	FLD CHLORINE (TOTAL)	.	.	.	12	12	0	16	16	0
	FLD PH	12	12	0	12	12	0	18	18	0
	FLD TEMPERATURE	12	12	0	12	12	0	16	16	0
	FLD TURBIDITY	12	12	0	12	12	0	18	18	0
*TOTAL SCAN CHEMISTRY (FLD)		36	36	0	72	72	0	91	91	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	11	11	0	20	20	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	CALCIUM	12	12	0	11	11	0	20	20	0
	CYANIDE	11	0	0	11	0	0	10	0	0
	CHLORIDE	12	12	0	11	11	0	20	20	0
	COLOUR	12	2	10	11	0	10	20	0	20
	CONDUCTIVITY	12	12	0	11	11	0	20	20	0
	FLUORIDE	12	12	0	11	11	0	20	20	0
	HARDNESS	12	12	0	11	11	0	20	20	0
	IONCAL	12	6	0	12	6	0	20	10	0
	LANGELIERS INDEX	12	12	0	10	10	0	20	20	0
	MAGNESIUM	12	12	0	11	11	0	20	20	0
	SODIUM	12	12	0	11	11	0	20	20	0
	AMMONIUM TOTAL	12	9	3	11	9	2	20	15	5
	NITRITE	12	9	3	11	3	8	20	8	12
	TOTAL NITRATES	12	12	0	11	11	0	20	20	0
	NITROGEN TOT KJELD	12	12	0	11	11	0	20	20	0
	PH	12	12	0	11	11	0	20	20	0
	PHOSPHORUS FIL REACT	12	6	6	11	1	10	.	.	.
	PHOSPHORUS TOTAL	12	8	4	11	2	8	.	.	.
	SULPHATE	6	6	0	5	5	0	10	10	0
	TURBIDITY	12	12	0	11	8	3	20	20	0
*TOTAL SCAN CHEMISTRY (LAB)		245	202	26	225	165	41	360	303	37
METALS	SILVER	12	0	4	11	0	6	20	0	16

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS	ALUMINUM	12	12	0	11	11	0	20	20	0
	ARSENIC	12	5	7	11	3	8	20	3	17
	BARIUM	12	12	0	11	11	0	20	20	0
	BORON	12	12	0	11	11	0	20	20	0
	BERYLLIUM	12	0	8	11	0	6	20	0	10
	CADMIUM	12	0	2	11	0	2	20	0	6
	COBALT	12	0	12	11	0	11	20	0	20
	CHROMIUM	12	7	5	11	6	5	20	8	12
	COPPER	12	12	0	11	11	0	20	20	0
	IRON	12	2	10	11	0	4	20	1	18
	MERCURY	12	2	7	11	3	3	10	4	4
	MANGANESE	12	12	0	11	5	6	20	19	1
	MOLYBDENUM	12	12	0	11	11	0	20	20	0
	NICKEL	12	3	8	11	1	10	20	9	9
	LEAD	12	10	2	11	0	11	20	14	6
	ANTIMONY	12	9	3	11	10	1	20	20	0
	SELENIUM	12	0	6	11	0	10	20	0	19
	STRONTIUM	12	12	0	11	11	0	20	20	0
	TITANIUM	12	11	1	11	10	1	20	18	2
	THALLIUM	12	0	3	11	0	3	20	0	7
	URANIUM	12	12	0	11	11	0	20	20	0
	VANADIUM	12	0	12	11	3	8	20	5	15
	ZINC	12	12	0	11	11	0	20	20	0
*TOTAL SCAN METALS		288	157	90	264	129	95	470	261	162
*TOTAL GROUP INORGANIC & PHYSICAL		569	395	116	561	366	156	921	655	199

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROAROMATICS	HEXACHLOROBUTADIENE	12	0	0	11	0	0	10	0	0
	123 TRICHLOROBENZENE	12	0	0	11	0	0	10	0	0
	1234 T-CHLOROBENZENE	12	0	0	11	0	0	10	0	0
	1235 T-CHLOROBENZENE	12	0	0	11	0	0	10	0	0
	124 TRICHLOROBENZENE	12	0	0	11	0	0	10	0	0
	1245 T-CHLOROBENZENE	12	0	0	11	0	0	10	0	0
	135 TRICHLOROBENZENE	12	0	0	11	0	0	10	0	0
	HCB	12	0	0	11	0	0	10	0	0
	HEXACHLOROETHANE	12	0	0	11	0	0	10	0	0
	OCTACHLOROSTYRENE	12	0	0	11	0	0	10	0	0
	PENTACHLOROBENZENE	12	0	0	11	0	0	10	0	0
	236 TRICHLOROTOLUENE	12	0	0	11	0	0	10	0	0
	245 TRICHLOROTOLUENE	12	0	0	11	0	0	10	0	0
	26A TRICHLOROTOLUENE	12	0	0	11	0	0	10	0	0
*TOTAL SCAN CHLOROAROMATICS		168	0	0	154	0	0	140	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
	2345 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.
	2356 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.
	245-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
	246-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
	PENTACHLOROPHENOL	2	0	0	2	0	0	.	.	.
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PAH	PHENANTHRENE	12	0	0	11	0	0	.	.	.
	ANTHRACENE	12	0	0	11	0	0	.	.	.
	FLUORANTHENE	12	0	0	11	0	0	.	.	.
	PYRENE	12	0	0	11	0	0	.	.	.
	BENZO(A)ANTHRACENE	12	0	0	11	0	0	.	.	.
	CHRYSENE	12	0	0	11	0	0	.	.	.
	DIMETH. BENZ(A)ANTHR	12	0	0	11	0	0	.	.	.
	BENZO(E) PYRENE	12	0	0	11	0	0	.	.	.
	BENZO(J) FLUORANTHEN	0	0	0	0	0	0	.	.	.
	BENZO(B) FLUORANTHEN	12	0	0	11	0	0	.	.	.
	PERYLENE	12	0	0	11	0	0	.	.	.
	BENZO(K) FLUORANTHEN	12	0	0	11	0	0	.	.	.
	BENZO(A) PYRENE	12	0	0	11	0	0	.	.	.
	BENZO(G,H,I) PERYLEN	12	0	0	11	0	0	.	.	.
	DIBENZO(A,H) ANTHRAC	12	0	0	11	0	0	.	.	.
	INDENO(1,2,3-C,D) PY	12	0	0	11	0	0	.	.	.
	BENZO(B) CHRYSENE	12	0	0	11	0	0	.	.	.
	ANTHANTHRENE	0	0	0	0	0	0	.	.	.
	CORONENE	12	0	0	11	0	0	.	.	.
*TOTAL SCAN PAH		204	0	0	187	0	0	0	0	0
PESTICIDES & PCB	ALDRIN	12	0	0	11	0	0	10	0	0
	ALPHA BHC	12	0	9	11	0	9	10	0	8

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	BETA BHC	12	0	0	11	0	0	10	0	0
	LINDANE	12	0	3	11	0	4	10	0	4
	ALPHA CHLORDANE	12	0	0	11	0	0	10	0	0
	GAMMA CHLORDANE	12	0	0	11	0	0	10	0	0
	DIELDRIN	12	0	0	11	0	0	10	0	0
	METHOXYCHLOR	12	0	0	11	0	0	10	0	0
	ENDOSULFAN 1	12	0	0	11	0	0	10	0	0
	ENDOSULFAN II	12	0	0	11	0	0	10	0	0
	ENDRIN	12	0	0	11	0	0	10	0	0
	ENDOSULFAN SULPHATE	12	0	0	11	0	0	10	0	0
	HEPTACHLOR EPOXIDE	12	0	0	11	0	0	10	0	0
	HEPTACHLOR	12	0	0	11	0	0	10	0	0
	MIREX	12	0	0	11	0	0	10	0	0
	OXYCHLORDANE	12	0	0	11	0	0	10	0	0
	OPDDT	12	0	0	11	0	0	10	0	0
	PCB	12	0	0	11	0	0	10	0	0
	DDD	12	0	0	11	0	0	10	0	0
	PPDDE	12	0	0	11	0	0	10	0	0
	PPDDT	12	0	0	11	0	0	10	0	0
	AMETRINE	12	0	0	11	0	0	10	0	0
	ATRAZINE	12	0	0	11	0	0	10	0	0
	ATRATONE	12	0	0	11	0	0	10	0	0
	CYANAZINE	12	0	0	11	0	0	10	0	0
	DES ETHYL ATRAZINE	6	0	0	5	0	0	5	0	0
	DES ETHYL SIMAZINE	6	0	0	5	0	0	5	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	PROMETONE	12	0	0	11	0	0	10	0	0
	PROPAZINE	12	0	0	11	0	0	10	0	0
	PROMETRYNE	12	0	0	11	0	0	10	0	0
	METRIBUZIN	12	0	0	11	0	0	10	0	0
	SIMAZINE	12	0	0	11	0	0	10	0	0
	ALACHLOR	12	0	0	11	0	0	10	0	0
	METOLACHLOR	12	0	0	11	0	0	10	0	0
*TOTAL SCAN PESTICIDES & PCB		396	0	12	362	0	13	330	0	12
PHENOLICS	PHENOLICS	12	5	6	11	1	9	.	.	.
*TOTAL SCAN PHENOLICS		12	5	6	11	1	9	0	0	0
SPECIFIC PESTICIDES	TOXAPHENE	0	0	0	0	0	0	0	0	0
	2,4,5-T	2	0	0	2	0	0	.	.	.
	2,4-D	2	0	0	2	0	0	.	.	.
	24DCHLRPHENOXYBUTYRC	2	0	0	2	0	0	.	.	.
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	.	.	.
	DICAMBA	2	0	0	2	0	0	.	.	.
	PICHLORAM	0	0	0	0	0	0	.	.	.
	SILVEX	2	0	0	2	0	0	.	.	.
	DIAZINON	2	0	0	2	0	0	.	.	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
SPECIFIC PESTICIDES	DICHLOROVOS	2	0	0	2	0	0	.	.	.
	CHLORPYRIFOS	2	0	0	2	0	0	.	.	.
	ETHION	2	0	0	2	0	0	.	.	.
	AZINPHOS-METHYL	0	0	0	0	0	0	.	.	.
	MALATHION	2	0	0	2	0	0	.	.	.
	MEVINPHOS	2	0	0	2	0	0	.	.	.
	METHYL PARATHION	2	0	0	2	0	0	.	.	.
	METHYLTRITHION	2	0	0	2	0	0	.	.	.
	PARATHION	2	0	0	2	0	0	.	.	.
	PHORATE	2	0	0	2	0	0	.	.	.
	RELDAN	2	0	0	2	0	0	.	.	.
	RONNEL	2	0	0	2	0	0	.	.	.
	AMINOCARB	0	0	0	0	0	0	.	.	.
	BENONYL	2	0	0	2	0	0	.	.	.
	BUX	2	0	0	2	0	0	.	.	.
	CARBOFURAN	2	0	0	2	0	0	.	.	.
	CICP	2	0	0	2	0	0	.	.	.
	DIALLATE	2	0	0	2	0	0	.	.	.
	EPTAM	2	0	0	2	0	0	.	.	.
	IPC	2	0	0	2	0	0	.	.	.
	PROPOXUR	2	0	0	2	0	0	.	.	.
	CARBARYL	2	0	0	2	0	0	.	.	.
	BUTYLATE	2	0	0	2	0	0	.	.	.
*TOTAL SCAN SPECIFIC PESTICIDES		56	0	0	56	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	BENZENE	10	0	0	10	0	2	9	0	0
	TOLUENE	10	0	1	10	2	2	9	2	0
	ETHYLBENZENE	10	0	3	10	0	10	9	0	3
	P-XYLENE	10	0	0	10	0	1	9	0	0
	M-XYLENE	10	0	0	10	0	1	9	0	0
	O-XYLENE	10	0	0	10	0	2	9	0	0
	STYRENE	3	0	2	2	0	2	2	0	1
	1,1 DICHLOROETHYLENE	10	0	0	10	0	0	9	0	0
	METHYLENE CHLORIDE	10	0	0	10	0	0	9	0	1
	T1,2DICHLOROETHYLENE	10	0	0	10	0	0	9	0	0
	1,1 DICHLOROETHANE	10	0	0	10	0	0	9	0	0
	CHLOROFORM	10	0	4	10	9	0	9	9	0
	111, TRICHLOROETHANE	10	0	0	10	0	0	9	0	0
	1,2 DICHLOROETHANE	10	0	0	10	0	0	9	0	0
	CARBON TETRACHLORIDE	10	0	0	10	0	2	9	0	1
	1,2 DICHLOROPROPANE	10	0	0	10	0	0	9	0	0
	TRICHLOROETHYLENE	10	0	0	10	0	0	9	0	0
	DICHLOROBROMOMETHANE	10	0	0	10	10	0	9	9	0
	112 TRICHLOROETHANE	10	0	0	10	0	0	9	0	0
	CHLORODIBROMOMETHANE	10	0	0	10	10	0	9	9	0
	T-CHLOROETHYLENE	10	0	1	9	0	0	9	0	0
	BROMOFORM	10	0	0	10	0	10	9	0	9
	1122 T-CHLOROETHANE	10	0	0	10	0	0	9	0	0
	CHLOROBENZENE	10	0	0	10	0	0	9	0	0
	1,4 DICHLOROBENZENE	10	0	0	10	0	0	9	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP)

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	RAW			TREATED			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	1,3 DICHLOROBENZENE	10	0	0	10	0	0	9	0	0
	1,2 DICHLOROBENZENE	10	0	0	10	0	0	9	0	0
	TRIFLUOROCHLOROTOLUE	4	0	0	5	0	0	4	0	0
	ETHLYENE DIBROMIDE	10	0	0	10	0	0	9	0	0
	TOTL TRIHALOMETHANES	10	0	0	10	10	0	9	9	0
*TOTAL SCAN VOLATILES		287	0	11	286	41	32	258	38	15
*TOTAL GROUP ORGANIC		1135	5	29	1068	42	54	728	38	27
TOTAL		1748	443	145	1671	414	190	1696	705	226

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)

1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
   Poor water quality is indicated when :
   - total coliform counts > 0 < 5
   - P/A Bottle Test is present after 48 hours
   - Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
   - Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
   - Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours
2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
   - hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)

1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, the AO is a total)

C WORLD HEALTH ORGANIZATION (WHO)

1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)

1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)

1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:
1. Exclude the low-level data because of this uncertainty factor. However, studies of long-term environmental trends and modelling may be adversely affected by exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported qualified by the code "<T". Results quantified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. However the average of such data is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident

!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours
T# (T06)	Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
BACTERIOLOGICAL				
AEROMONAS SP (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)
APR	.	.	.	0
AUG	.	.	.	0
E. COLI P/A (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = N/A
APR	.	.	.	0
AUG	.	.	.	0
FECAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 0 (A1)
JAN	4	.	.	.
FEB	11	.	.	.
MAR	1	.	.	.
APR	3	.	.	.
MAY	0	.	.	.
JUN	1	.	.	.
JUL	14	.	.	.
AUG	8	.	.	.
SEP	2 T48	.	.	.
OCT	7 T48	.	.	.
NOV	12 T24	.	.	.
DEC	2 T24	.	.	.
FECAL COLIFORM (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)
APR	.	.	.	0
AUG	.	.	.	0
STANDRD PLATE CNT MF (CT/ML)			DET'N LIMIT = 0	GUIDELINE = 500/ML (A1)
JAN	29	0	.	3
FEB	101	0	.	2
MAR	112	9	.	14
APR	380	0	.	2
MAY	210	0	.	.
JUN	83	0	.	2
JUL	2400 >	18	.	15
AUG	56	1	.	7
SEP	.	2 <=>	.	34 T24
OCT	.	NSS	.	2 <=>
NOV	.	6 <=>	.	3 <=>
DEC	.	3 <=>	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
P/A BOTTLE (0=ABSENT)		DET'N LIMIT = 0		GUIDELINE = 0 (A1*)
JAN	.	0	.	0
FEB	.	0	.	0
MAR	.	0	.	0
APR	.	0	.	1
MAY	.	0	.	.
JUN	.	0	.	0
JUL	.	0	.	0
AUG	.	0	.	1
STAPH AUREUS (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)
APR	.	.	.	0
AUG	.	.	.	0
COLIFORM (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)
APR	.	.	.	0
AUG	.	.	.	1
TOTAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)
JAN	67	0	.	0
FEB	700	0	.	0
MAR	76	0	.	0
APR	27 A3C	0	.	0
MAY	4	0	.	.
JUN	54	0	.	0
JUL	600	0	.	0
AUG	118	0	.	0
SEP	20 A3C	0 T48	.	0 T24
OCT	44 A3C	NSS	.	0 T24
NOV	112 A3C	0 T24	.	0 T06
DEC	6 T24	0 T24	.	.
T COLIFORM BCKGRD MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = N/A
JAN	180	1	.	0
FEB	900	0	.	0
MAR	340	0	.	17
APR	550	0	.	0
MAY	26	0	.	.
JUN	62	0	.	0
JUL	3300	0	.	0
AUG	258	0	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
SEP	830 A3C	1 T48	.	0 T24
OCT	2400 >	2400 >	.	0 T24
NOV	580 A3C	0 T24	.	0 T06
DEC	42 T24	0 T24	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
CHEMISTRY (FLD)				
FLD CHLORINE (COMB) (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A
JAN	.	.100	.	.200
FEB	.	.200	.	.
MAR	.	.650	.500	.700
APR	.	.600	.	.
MAY	.	.620	.	.
JUN	.	.260	.300	.200
JUL	.	.200	.300	.700
AUG	.	.500	.100	.200
SEP	.	.700	.100	.200
OCT	.	.100	.300	.
NOV	.	.200	.	.200
DEC	.	.550	.	.
FLD CHLORINE FREE (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A
JAN	.	.600	.300	.500
FEB	.	.400	.	.
MAR	.	.200	.	.
APR	.	.100	.	.
MAY	.	.080	.	.
JUN	.	.530	.	.500
JUL	.	.500	.	.
AUG	.	.100	.300	.500
SEP	.	.100	.	.300
OCT	.	.550	.100	.500
NOV	.	.400	.300	.500
DEC	.	.050	.	.
FLD CHLORINE (TOTAL) (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A
JAN	.	.700	.300	.700
FEB	.	.600	.	.
MAR	.	.850	.500	.700
APR	.	.700	.	.
MAY	.	.700	.	.
JUN	.	.790	.300	.700
JUL	.	.700	.300	.700
AUG	.	.600	.300	.700
SEP	.	.800	.100	.500
OCT	.	.650	.400	.500
NOV	.	.600	.300	.700
DEC	.	.600	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
FLD PH (DIMENSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JAN	8.200	7.400	7.690	7.600
FEB	8.300	7.200	7.600	7.500
MAR	8.400	7.400	7.500	7.500
APR	8.200	7.400	.	.
MAY	8.300	7.500	.	.
JUN	8.200	7.400	7.480	7.280
JUL	8.400	7.500	7.620	7.390
AUG	8.100	7.600	7.700	7.400
SEP	8.100	7.300	7.720	7.520
OCT	8.200	7.400	7.630	7.530
NOV	8.400	7.400	7.560	7.430
DEC	8.200	7.400	.	.
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A	GUIDELINE = 15 (A1)
JAN	3.000	4.000	14.000	7.000
FEB	2.000	2.500	.	.
MAR	2.000	3.500	12.000	5.000
APR	5.000	5.000	.	.
MAY	7.300	7.500	.	.
JUN	7.300	7.000	16.000	10.000
JUL	10.000	10.000	18.000	12.000
AUG	11.000	12.000	19.500	14.000
SEP	8.000	8.000	20.100	14.000
OCT	9.000	9.000	16.000	12.000
NOV	6.000	6.000	14.000	9.000
DEC	4.000	6.000	.	.
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A	GUIDELINE = 1.0 (A1)
JAN	.900	.090	.260	.190
FEB	2.000	.120	.140	.140
MAR	3.000	.170	.250	.190
APR	.800	.180	.	.
MAY	1.100	.180	.	.
JUN	1.100	.120	.260	.170
JUL	.700	.150	.270	.240
AUG	.600	.120	.280	.270
SEP	.600	.120	.150	.180
OCT	.700	.100	.190	.200
NOV	.900	.100	.120	.110
DEC	.600	.070	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
CHEMISTRY (LAB)				
ALKALINITY (MG/L)			DET'N LIMIT = .200	GUIDELINE = 30-500 (A4)
JAN	97.500	93.000	91.300	92.000
FEB	98.800	88.000	88.700	89.500
MAR	102.600	90.700	91.500	91.100
APR	103.400	96.500	95.800	96.800
MAY	95.200	88.300	.	.
JUN	103.300	87.800	89.200	88.700
JUL	101.900	90.100	89.900	89.800
AUG	102.400	93.100	95.100	95.300
SEP	102.100	94.700	94.400	94.100
OCT	102.000	NSS	95.400	95.400
NOV	101.800	93.900	93.200	93.200
DEC	102.500	92.400	.	.
CALCIUM (MG/L)			DET'N LIMIT = .100	GUIDELINE = 100 (F2)
JAN	40.800	42.000	41.600	41.200
FEB	39.600	40.000	39.800	39.400
MAR	39.800	39.400	39.000	38.600
APR	40.600	39.800	39.800	41.200
MAY	40.600	39.800	.	.
JUN	38.200	37.400	41.000	38.600
JUL	39.800	40.800	40.800	40.200
AUG	40.400	39.600	41.400	41.200
SEP	41.400	41.400	40.600	40.600
OCT	40.600	NSS	38.600	38.600
NOV	43.200	43.800	42.000	41.800
DEC	41.400	42.000	.	.
CHLORIDE (MG/L)			DET'N LIMIT = .200	GUIDELINE = 250 (A3)
JAN	23.500	25.400	25.500	25.400
FEB	25.400	32.400	29.400	28.700
MAR	27.700	30.100	29.200	28.600
APR	24.100	25.100	26.800	27.300
MAY	24.300	26.900	.	.
JUN	23.500	27.000	26.100	25.900
JUL	23.600	26.400	26.400	26.300
AUG	23.000	23.700	23.700	24.500
SEP	23.500	25.100	24.900	24.800
OCT	22.800	NSS	24.200	24.300
NOV	23.900	25.000	25.200	25.300
DEC	23.200	26.700	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
COLOUR (TCU)		DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)
JAN	1.000 <T	BDL	1.500 <T	1.000 <T
FEB	2.000 <T	1.000 <T	1.500 <T	1.000 <T
MAR	3.000	.500 <T	1.000 <T	1.000 <T
APR	2.000 <T	1.000 <T	1.500 <T	1.000 <T
MAY	2.000 <T	.500 <T	.	.
JUN	2.000 <T	.500 <T	1.000 <T	.500 <T
JUL	2.500	.500 <T	1.000 <T	1.000 <T
AUG	1.500 <T	.500 <T	1.000 <T	1.000 <T
SEP	1.500 <T	.500 <T	1.500 <T	1.000 <T
OCT	2.000 <T	NSS	1.500 <T	1.500 <T
NOV	1.500 <T	.500 <T	.500 <T	1.000 <T
DEC	1.500 <T	.500 <T	.	.
CONDUCTIVITY (UMHO/CM)		DET'N LIMIT = 1		GUIDELINE = 400 (F2)
JAN	327	337	337	339
FEB	336	356	347	345
MAR	341	345	342	339
APR	335	345	344	351
MAY	339	349	.	.
JUN	336	343	341	339
JUL	331	338	337	335
AUG	328	330	334	332
SEP	329	333	331	330
OCT	326	NSS	331	330
NOV	331	336	337	338
DEC	326	331	.	.
FLUORIDE (MG/L)		DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)
JAN	.100	1.260	1.220	1.180
FEB	.140	1.120	1.160	1.100
MAR	.130	1.140	1.120	1.120
APR	.120	1.300	1.260	1.240
MAY	.130	1.330	.	.
JUN	.130	1.230	1.240	1.240
JUL	.130	1.080	1.140	1.130
AUG	.130	1.080	1.100	1.140
SEP	.140	1.140	1.100	1.040
OCT	.120	NSS	1.100	1.080
NOV	.120	1.140	1.140	1.100
DEC	.120	1.080	.	.
HARDNESS (MG/L)		DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
JAN	137.000	141.000	140.000	139.000
FEB	133.000	133.000	134.000	132.000
MAR	135.000	133.000	133.000	132.000
APR	136.000	135.000	134.000	135.000
MAY	135.000	133.000	.	.
JUN	128.000	127.000	136.000	130.000
JUL	133.000	136.000	137.000	134.000
AUG	136.000	135.000	138.000	138.000
SEP	139.000	138.000	137.000	136.000
OCT	136.000	NSS	129.000	130.000
NOV	144.000	145.000	141.000	140.000
DEC	139.000	141.000	.	.
IONCAL (DMSNLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A
JAN	.000 NAF	.000 NAF	.000 NAF	.000 NAF
FEB	.000 NAF	.000 NAF	.000 NAF	.000 NAF
MAR	.000 NAF	.000 NAF	.000 NAF	.000 NAF
APR	.000 NAF	.000 NAF	.000 NAF	.000 NAF
MAY	.000 NAF	.000 NAF	.	.
JUN	.000 NAF	.000 NAF	.000 NAF	.000 NAF
JUL	4.160	.006	.649	1.038
AUG	1.191	.976	2.604	2.161
SEP	.340	1.616	1.183	.367
OCT	1.983	4.665	5.417	4.453
NOV	3.588	5.174	1.960	1.409
DEC	1.423	.459	.	.
LANGELIERS INDEX (DMSNLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A
JAN	.346 NAF	.217 NAF	.245 NAF	.244 NAF
FEB	.278 NAF	-.070 NAF	.052 NAF	.022 NAF
MAR	.436 NAF	.217 NAF	.277 NAF	.141 NAF
APR	.538 NAF	.419 NAF	.416 NAF	.414 NAF
MAY	.352 NAF	.120 NAF	.	.
JUN	.481 NAF	.131 NAF	.398 NAF	.319 NAF
JUL	.424	.070	.219	.173
AUG	.203	-.188	.121	.040
SEP	.342	.139	.309	.258
OCT	.443	.434	.352	.352
NOV	.409	.069	.178	.086
DEC	.514	.355	.	.
MAGNESIUM (MG/L)		DET'N LIMIT = .050		GUIDELINE = 30 (F2)
JAN	8.500	8.700	8.700	8.800

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
FEB	8.400	8.200	8.300	8.200
MAR	8.600	8.500	8.600	8.600
APR	8.500	8.500	8.300	7.900
MAY	8.200	8.200	.	.
JUN	8.000	8.100	8.100	8.100
JUL	8.100	8.400	8.500	8.100
AUG	8.500	8.700	8.600	8.600
SEP	8.600	8.500	8.800	8.400
OCT	8.300	NSS	7.900	8.200
NOV	8.800	8.800	8.700	8.700
DEC	8.800	8.600	.	.
SODIUM (MG/L)			DET'N LIMIT = .200	GUIDELINE = 200 (C3)
JAN	12.600	12.800	12.600	13.000
FEB	13.400	15.200	13.600	14.000
MAR	14.800	14.400	13.800	13.600
APR	13.200	13.200	13.600	14.400
MAY	13.400	13.200	.	.
JUN	11.600	11.600	11.600	11.400
JUL	12.000	12.000	12.200	12.200
AUG	12.000	11.800	12.000	12.200
SEP	12.200	12.200	12.200	12.000
OCT	12.400	NSS	12.000	12.200
NOV	12.400	11.800	11.800	11.200
DEC	12.000	12.000	.	.
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = .05 (F2)
JAN	.008 <T	.010	.012	.004 <T
FEB	.054	.008 <T	.008 <T	.008 <T
MAR	.054	.118	.120	.126
APR	.044	.112	.084	.094
MAY	.032	.076	.	.
JUN	.052	.012	.014	.010
JUL	.068	.088	.098	.098
AUG	.028	.080	.114	.118
SEP	.014	.084	.036	.014
OCT	.010	NSS	.118	.108
NOV	.006 <T	.008 <T	.008 <T	.006 <T
DEC	.008 <T	.126	.	.
NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1.000 (A1)
JAN	.002 <T	.001 <T	.001 <T	.001 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
FEB	.016	.001 <T	.001 <T	.001 <T
MAR	.046	.008	.011	.018
APR	.016	.002 <T	.004 <T	.002 <T
MAY	.059	.006	.	.
JUN	.010	.001 <T	.001 <T	.001 <T
JUL	.008	.002 <T	.004 <T	.002 <T
AUG	.011	.002 <T	.005	.003 <T
SEP	.004 <T	.002 <T	.005	.003 <T
OCT	.005	NSS	.010	.007
NOV	.005	.005	.005	.005
DEC	.003 <T	.004 <T	.	.
TOTAL NITRATES (MG/L)		DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)
JAN	.410	.420	.415	.395
FEB	.420	.405	.415	.415
MAR	.480	.455	.445	.445
APR	.395	.385	.405	.405
MAY	.445	.405	.	.
JUN	.375	.365	.370	.365
JUL	.350	.340	.345	.325
AUG	.330	.320	.345	.335
SEP	.325	.330	.335	.315
OCT	.400	NSS	.340	.330
NOV	.410	.405	.410	.410
DEC	.425	.425	.	.
NITROGEN TOT KJELD (MG/L)		DET'N LIMIT = .020		GUIDELINE = N/A
JAN	.370	.170	.160	.140
FEB	.270	.200	.190	.180
MAR	.220	.270	.340	.280
APR	.200	.280	.290	.310
MAY	.240	.270	.	.
JUN	.260	.170	.190	.160
JUL	.360	.260	.290	.290
AUG	.230	.300	.370	.320
SEP	.250	.160	.240	.200
OCT	.190	NSS	.250	.240
NOV	.210	.130	.150	.140
DEC	.190	.260	.	.
PH (DMSNLESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)
JAN	8.190	8.070	8.110	8.110

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
FEB	8.130	7.830	7.950	7.920
MAR	8.270	8.110	8.170	8.040
APR	8.360	8.280	8.280	8.260
MAY	8.210	8.020	.	.
JUN	8.330	8.060	8.280	8.230
JUL	8.260	7.950	8.100	8.060
AUG	8.030	7.690	7.970	7.890
SEP	8.160	7.990	8.170	8.120
OCT	8.270	NSS	8.230	8.230
NOV	8.210	7.900	8.030	7.940
DEC	8.330	8.210	.	.
PHOSPHORUS FIL REACT (MG/L)		DET'N LIMIT = .0005		GUIDELINE = N/A
JAN	.004	.002 <T	.	.
FEB	.005	.001 <T	.	.
MAR	.002	.002 <T	.	.
APR	.003	.001 <T	.	.
MAY	.001 <T	.001 <T	.	.
JUN	.003	.001 <T	.	.
JUL	.001 <T	.001 <T	.	.
AUG	.000 <T	.001 <T	.	.
SEP	.001 <T	.001 <T	.	.
OCT	.000 <T	NSS	.	.
NOV	.005	.005	.	.
DEC	.001 <T	.001 <T	.	.
PHOSPHORUS TOTAL (MG/L)		DET'N LIMIT = .002		GUIDELINE = .40 (F2)
JAN	.011	.003	.	.
FEB	.017	.008 <T	.	.
MAR	.016	.006 <T	.	.
APR	.011	.003 <T	.	.
MAY	.012	.007 <T	.	.
JUN	.015	.002 <T	.	.
JUL	.018	.004 <T	.	.
AUG	.031	.028	.	.
SEP	.004 <T	BDL	.	.
OCT	.008 <T	NSS	.	.
NOV	.009 <T	.005 <T	.	.
DEC	.009 <T	.002 <T	.	.
SULPHATE (MG/L)		DET'N LIMIT = .200		GUIDELINE = 500. (A3)
JUL	28.000	32.900	32.900	32.800

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
AUG	26.820	30.150	30.040	29.430
SEP	27.200	30.000	30.300	30.000
OCT	28.900	NSS	31.700	31.800
NOV	26.990	30.930	31.610	30.620
DEC	30.000	34.500	.	.
TURBIDITY (FTU)		DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)
JAN	.510	.060 <T	.200	.110
FEB	2.000	.080 <T	.170	.120
MAR	2.100	.150	.270	.210
APR	.740	.130	.290	.260
MAY	.530	.160	.	.
JUN	1.450	.120	.210	.120
JUL	.620	.160	.790	.670
AUG	.920	.180	.330	.290
SEP	1.250	.630	.940	.830
OCT	1.270	NSS	.640	.860
NOV	1.900	.230	.230	.310
DEC	1.050	.170 <T	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
METALS				
SILVER (UG/L)		DET'N LIMIT = .020		GUIDELINE = 50. (A1)
JAN	.030 <T	.020 <T	.030 <T	.020 <T
FEB	.050 <T	.040 <T	.160 <T	.050 <T
MAR	BDL	.100 <T	.100 <T	.030 <T
APR	BDL	BDL	.130 <T	.040 <T
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.060 <T	BDL
JUL	.030 <T	BDL	.500 <T	.140 <T
AUG	BDL	BDL	.030 <T	BDL
SEP	BDL	.040 <T	.040 <T	BDL
OCT	BDL	NSS	.040 <T	BDL
NOV	.030 <T	.060 <T	.140 <T	.150 <T
DEC	BDL	.040 <T	.	.
ALUMINUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = 100.(A6)
JAN	17.400	62.640	55.680	51.040
FEB	35.960	58.000	49.880	55.680
MAR	42.920	70.760	58.000	54.520
APR	16.240	127.600	111.360	116.000
MAY	22.040	114.840	.	.
JUN	24.360	58.000	70.760	54.520
JUL	11.484	90.480	84.680	104.400
AUG	5.916	81.200	71.920	70.760
SEP	6.496	83.520	77.720	82.360
OCT	15.080	NSS	78.880	75.400
NOV	30.160	75.400	64.960	66.120
DEC	15.080	60.320	.	.
ARSENIC (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 50.0 (A1)
JAN	.870 <T	.920 <T	.930 <T	.840 <T
FEB	.730 <T	.820 <T	.710 <T	.810 <T
MAR	.620 <T	.450 <T	.240 <T	.140 <T
APR	.920 <T	.880 <T	1.100	.840 <T
MAY	1.100	1.100	.	.
JUN	.560 <T	.520 <T	.360 <T	.320 <T
JUL	.980 <T	.790 <T	.800 <T	.900 <T
AUG	1.100	1.200	.840 <T	.900 <T
SEP	1.200	1.300	1.400	1.200
OCT	1.100	NSS	.980 <T	1.000 <T
NOV	1.100	.830 <T	.760 <T	.930 <T
DEC	.950 <T	.620 <T	.	.
BARIUM (UG/L)		DET'N LIMIT = 0.020		GUIDELINE = 1000. (A1)

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
JAN	20.000	20.000	20.000	20.000
FEB	22.000	22.000	21.000	21.000
MAR	22.000	22.000	20.000	20.000
APR	21.000	21.000	22.000	22.000
MAY	22.000	22.000	.	.
JUN	26.000	25.000	25.000	26.000
JUL	24.000	23.000	24.000	22.000
AUG	24.000	23.000	22.000	23.000
SEP	24.000	23.000	23.000	23.000
OCT	22.000	NSS	22.000	22.000
NOV	25.000	23.000	23.000	23.000
DEC	22.000	21.000	.	.
BORON (UG/L)			DET'N LIMIT = 0.200	GUIDELINE = 5000. (A1)
JAN	29.000	26.000	25.000	24.000
FEB	27.000	27.000	27.000	26.000
MAR	24.000	26.000	25.000	23.000
APR	27.000	27.000	25.000	25.000
MAY	28.000	38.000	.	.
JUN	35.000	58.000	31.000	27.000
JUL	25.000	25.000	26.000	26.000
AUG	42.000	42.000	33.000	44.000
SEP	70.000	31.000	57.000	57.000
OCT	50.000	NSS	35.000	35.000
NOV	76.000	31.000	60.000	61.000
DEC	66.000	33.000	.	.
BERYLLIUM (UG/L)			DET'N LIMIT = 0.010	GUIDELINE = .20 (H)
JAN	.010 <T	.010 <T	BDL	.010 <T
FEB	BDL	BDL	BDL	.020 <T
MAR	.040 <T	.030 <T	.030 <T	.020 <T
APR	BDL	.040 <T	BDL	.050 <T
MAY	.050 <T	.060 <T	.	.
JUN	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL
AUG	.050 <T	BDL	BDL	.020 <T
SEP	.150 <T	.020 <T	.110 <T	.100 <T
OCT	.090 <T	NSS	BDL	BDL
NOV	.080 <T	BDL	.020 <T	.100 <T
DEC	.140 <T	.110 <T	.	.
CADMIUM (UG/L)			DET'N LIMIT = 0.050	GUIDELINE = 5.000 (A1)
JAN	BDL	.050 <T	.120 <T	.080 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
FEB	BDL	BDL	.110 <T	.090 <T
MAR	BDL	.050 <T	.130 <T	BDL
APR	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	.
JUN	.060 <T	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL
OCT	BDL	NSS	.070 <T	BDL
NOV	.060 <T	BDL	BDL	BDL
DEC	BDL	BDL	.	.
COBALT (UG/L)		DET'N LIMIT = 0.020		GUIDELINE = 1000 (N)
JAN	.330 <T	.370 <T	.320 <T	.290 <T
FEB	.100 <T	.110 <T	.070 <T	.070 <T
MAR	.210 <T	.130 <T	.180 <T	.170 <T
APR	.090 <T	.070 <T	.110 <T	.080 <T
MAY	.120 <T	.100 <T	.	.
JUN	.100 <T	.060 <T	.040 <T	.050 <T
JUL	.160 <T	.180 <T	.170 <T	.220 <T
AUG	.070 <T	.050 <T	.100 <T	.050 <T
SEP	.120 <T	.150 <T	.240 <T	.170 <T
OCT	.160 <T	NSS	.150 <T	.180 <T
NOV	.110 <T	.050 <T	.050 <T	.060 <T
DEC	.100 <T	.090 <T	.	.
CHROMIUM (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = 50. (A1)
JAN	.440 <T	.590 <T	.510 <T	.440 <T
FEB	.740 <T	.670 <T	.590 <T	.610 <T
MAR	.790 <T	.550 <T	.750 <T	.520 <T
APR	.900 <T	.790 <T	.520 <T	.530 <T
MAY	1.700	3.500	.	.
JUN	1.600	4.100	.910 <T	.800 <T
JUL	.400 <T	.390 <T	.400 <T	.490 <T
AUG	3.500	3.600	2.000	3.300
SEP	4.700	1.100	3.900	3.900
OCT	6.000	NSS	5.100	5.800
NOV	7.000	1.100	4.900	15.000
DEC	4.900	1.100	.	.
COPPER (UG/L)		DET'N LIMIT = .100		GUIDELINE = 1000 (A3)
JAN	11.000	3.100	6.400	4.500
FEB	9.200	3.700	40.000	6.300

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
MAR	7.500	2.700	34.000	9.100
APR	9.100	3.000	28.000	4.400
MAY	13.000	3.600	.	.
JUN	18.000	5.000	37.000	6.500
JUL	11.000	3.000	26.000	5.000
AUG	24.000	2.700	24.000	4.200
SEP	29.000	2.100	30.000	5.600
OCT	22.000	NSS	18.000	5.000
NOV	18.000	3.800	24.000	4.400
DEC	16.000	12.000	.	.
IRON (UG/L)		DET'N LIMIT = 4.000		GUIDELINE = 300. (A3)
JAN	22.000 <T	BDL	BDL	25.000 <T
FEB	68.000	13.000 <T	16.000 <T	13.000 <T
MAR	76.000	4.800 <T	33.000 <T	21.000 <T
APR	29.000 <T	11.000 <T	62.000	37.000 <T
MAY	29.000 <T	7.000 <T	.	.
JUN	37.000 <T	BDL	43.000 <T	26.000 <T
JUL	18.000 <T	BDL	15.000 <T	16.000 <T
AUG	7.700 <T	BDL	16.000 <T	21.000 <T
SEP	11.000 <T	BDL	25.000 <T	30.000 <T
OCT	21.000 <T	NSS	22.000 <T	27.000 <T
NOV	46.000 <T	BDL	9.300 <T	9.900 <T
DEC	5.500 <T	BDL	.	.
MERCURY (UG/L)		DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)
JAN	.030	.040	.	.040
FEB	BDL	.020	.	.020
MAR	BDL	BDL	.	.080
APR	.010	.010	.	.080
MAY	.040 <T	.030 <T	.	.
JUN	.040 <T	BDL	.	BDL
JUL	.020 <T	.020 <T	.	.020 <T
AUG	.020 <T	BDL	.	BDL
SEP	.020 <T	BDL	.	.020 <T
OCT	.050 <T	NSS	.	.030 <T
NOV	BDL	BDL	.	.040 <T
DEC	.020 <T	.030 <T	.	.
MANGANESE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 50.0 (A3)
JAN	1.900	.340 <T	.390 <T	1.600
FEB	3.700	.600	1.400	.950
MAR	4.900	1.200	2.400	1.800

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
APR	2.500	.890	4.100	2.900
MAY	2.900	.760	.	.
JUN	3.700	.420 <T	1.400	.960
JUL	2.700	.290 <T	1.300	.750
AUG	1.300	.420 <T	1.600	1.600
SEP	1.800	.530	1.900	1.600
OCT	2.000	NSS	1.800	2.000
NOV	3.100	.410 <T	.710	.800
DEC	2.500	.240 <T	.	.
MOLYBDENUM (UG/L)			DET'N LIMIT = 0.020	GUIDELINE = 500 (N)
JAN	1.100	1.100	1.200	1.200
FEB	1.200	1.200	1.300	1.200
MAR	1.200	1.300	1.200	1.200
APR	1.200	1.100	1.300	1.200
MAY	1.300	1.300	.	.
JUN	1.300	1.300	1.300	1.300
JUL	1.300	1.300	1.200	1.300
AUG	1.200	1.200	1.100	1.100
SEP	1.100	1.200	1.300	1.300
OCT	1.200	NSS	1.200	1.300
NOV	1.300	1.300	1.300	1.200
DEC	1.100	1.200	.	.
NICKEL (UG/L)			DET'N LIMIT = 0.100	GUIDELINE = 50. (F3)
JAN	3.900	4.400	4.400	4.300
FEB	.920 <T	.720 <T	1.900	1.000 <T
MAR	2.700	1.300 <T	2.000	1.400
APR	1.500	1.400 <T	2.400	1.500
MAY	.880 <T	.640 <T	.	.
JUN	.290 <T	.200 <T	.540 <T	BDL
JUL	.280 <T	.470 <T	2.400	.630 <T
AUG	BDL	.130 <T	1.500 <T	BDL
SEP	1.300 <T	1.200 <T	4.200	1.300 <T
OCT	1.100 <T	NSS	1.200 <T	1.200 <T
NOV	.350 <T	.710 <T	1.300 <T	.120 <T
DEC	1.400 <T	1.400 <T	.	.
LEAD (UG/L)			DET'N LIMIT = 0.050	GUIDELINE = 50. (A1)
JAN	.190 <T	.090 <T	.900	.170 <T
FEB	.420	.100 <T	.890	.190 <T
MAR	.390	.110 <T	1.200	.170 <T
APR	.150 <T	.030 <T	1.000	.160 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
MAY	.880	.100 <T	-	-
JUN	.370	.080 <T	2.000	.230
JUL	.290	.050 <T	1.100	.210
AUG	.330	.060 <T	.970	.220
SEP	.340	.080 <T	1.000	.210
OCT	.350	NSS	.560	.180 <T
NOV	.520	.050 <T	.670	.200 <T
DEC	.260	.110 <T	-	-
ANTIMONY (UG/L)		DET'N LIMIT = .050		GUIDELINE = 146. (D4)
JAN	.320	.230	.220	.220
FEB	.290	.270	.280	.320
MAR	.280	.260	.250	.260
APR	.220	.240	.290	.210
MAY	.190 <T	.230	-	-
JUN	.190 <T	.200 <T	.230	.210
JUL	.190 <T	.270	.270	.240
AUG	.570	.510	.520	.540
SEP	.630	.580	.740	.720
OCT	.600	NSS	.670	.630
NOV	.580	.590	.600	.730
DEC	.330	.400	-	-
SELENIUM (UG/L)		DET'N LIMIT = 0.200		GUIDELINE = 10. (A1)
JAN	BDL	.690 <T	.440 <T	.580 <T
FEB	BDL	.770 <T	.870 <T	1.500 <T
MAR	.460 <T	1.200 <T	1.300 <T	.880 <T
APR	.230 <T	.750 <T	1.700 <T	2.300 <T
MAY	BDL	.980 <T	-	-
JUN	.790 <T	.750 <T	.660 <T	1.500 <T
JUL	BDL	BDL	BDL	.890 <T
AUG	BDL	.390 <T	.230 <T	.290 <T
SEP	.440 <T	1.800 <T	.730 <T	1.600 <T
OCT	.280 <T	NSS	3.500 <T	2.800 <T
NOV	.610 <T	1.400 <T	3.100 <T	4.100 <T
DEC	BDL	.210 <T	-	-
STRONTIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = 2000.(N)
JAN	170.000	170.000	170.000	170.000
FEB	180.000	220.000	190.000	180.000
MAR	200.000	180.000	180.000	190.000
APR	180.000	180.000	190.000	190.000
MAY	190.000	190.000	-	-

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
JUN	200.000	190.000	190.000	200.000
JUL	170.000	170.000	170.000	180.000
AUG	160.000	160.000	170.000	160.000
SEP	190.000	190.000	190.000	190.000
OCT	180.000	MSS	170.000	190.000
NOV	180.000	180.000	180.000	180.000
DEC	170.000	170.000	.	.
TITANIUM (UG/L)			DET'N LIMIT = .050	GUIDELINE = N/A
JAN	3.400	3.700	3.300	3.000
FEB	6.100	5.700	5.000	5.200
MAR	3.500	4.100	3.600	3.500
APR	3.300	3.400	2.400	2.700
MAY	4.700	4.100	.	.
JUN	4.500	4.700	4.300	4.300
JUL	1.500 <T	1.500 <T	1.500 <T	1.800 <T
AUG	3.200	3.100	3.500	3.500
SEP	5.100	5.300	5.200	5.200
OCT	3.800	MSS	3.300	3.100
NOV	5.700	4.700	4.900	4.700
DEC	3.800	3.300	.	.
THALLIUM (UG/L)			DET'N LIMIT = .010	GUIDELINE = 13. (D4)
JAN	.030 <T	.020 <T	.010 <T	.010 <T
FEB	.030 <T	.010 <T	.020 <T	.020 <T
MAR	.040 <T	.020 <T	.020 <T	.010 <T
APR	BDL	BDL	BDL	.020 <T
MAY	BDL	BDL	.	.
JUN	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL
OCT	BDL	MSS	BDL	BDL
NOV	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	.
URANIUM (UG/L)			DET'N LIMIT = .020	GUIDELINE = 20. (A2)
JAN	.380	.400	.390	.350
FEB	.460	.430	.440	.390
MAR	.400	.370	.360	.340
APR	.360	.320	.460	.400
MAY	.350	.380	.	.
JUN	.360	.270	.280	.290

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
JUL	.400	.360	.360	.370
AUG	.350	.350	.310	.370
SEP	.340	.350	.330	.350
OCT	.320	NSS	.330	.340
NOV	.340	.300	.310	.360
DEC	.360	.350	.	.
VANADIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = 100 (N)
JAN	.370 <T	.460	.410	.440
FEB	.330 <T	.290 <T	.330 <T	.280 <T
MAR	.270 <T	.350 <T	.330 <T	.280 <T
APR	.320 <T	.330 <T	.320 <T	.270 <T
MAY	.220 <T	.320 <T	.	.
JUN	.290 <T	.680	.500 <T	.510
JUL	.330 <T	.510	.480 <T	.550
AUG	.190 <T	.360 <T	.330 <T	.330 <T
SEP	.310 <T	.480 <T	.420 <T	.400 <T
OCT	.340 <T	NSS	.380 <T	.310 <T
NOV	.320 <T	.490 <T	.440 <T	.580
DEC	.340 <T	.450 <T	.	.
ZINC (UG/L)		DET'N LIMIT = .001		GUIDELINE = 5000. (A3)
JAN	1.400	1.200	14.000	1.800
FEB	2.500	2.100	37.000	3.300
MAR	4.600	1.200	24.000	2.300
APR	2.100	1.600	27.000	2.200
MAY	2.500	1.500	.	.
JUN	2.200	1.700	17.000	3.400
JUL	2.000	1.600	21.000	2.400
AUG	2.100	1.400	20.000	2.000
SEP	2.900	2.000	24.000	2.700
OCT	1.800	NSS	9.500	3.300
NOV	2.400	2.200	21.000	3.000
DEC	1.900	2.900	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
PESTICIDES & PCB				
ALPHA BHC (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 700 (G)
JAN	2.000 <T	3.000 <T	.	3.000 <T
FEB	BDL	BDL	.	BDL
MAR	2.000 <T	2.000 <T	.	2.000 <T
APR	3.000 <T	3.000 <T	.	3.000 <T
MAY	1.000 <T	2.000 <T	.	.
JUN	3.000 <T	3.000 <T	.	BDL
JUL	2.000 <T	2.000 <T	.	2.000 <T
AUG	1.000 <T	2.000 <T	.	2.000 <T
SEP	2.000 <T	3.000 <T	.	2.000 <T
OCT	BDL	NSS	.	2.000 <T
NOV	1.000 <T	2.000 <T	.	2.000 <T
DEC	BDL	BDL	.	.
LINDANE (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 4000 (A1)
JAN	BDL	BDL	.	2.000 <T
FEB	BDL	BDL	.	BDL
MAR	BDL	1.000 <T	.	1.000 <T
APR	1.000 <T	1.000 <T	.	1.000 <T
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	1.000 <T	1.000 <T	.	BDL
OCT	BDL	NSS	.	BDL
NOV	1.000 <T	1.000 <T	.	1.000 <T
DEC	BDL	BDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
PHENOLICS (UG/L PHENOLICS)		DET'N LIMIT = 0.2		GUIDELINE = 2.00 (A3)
JAN	.600 <T	.600 <T	-	-
FEB	.600 <T	.600 <T	-	-
MAR	1.000 <T	.600 <T	-	-
APR	BDL	BDL	-	-
MAY	1.400	.800 <T	-	-
JUN	1.000	.800 <T	-	-
JUL	1.400	.600 <T	-	-
AUG	1.000 <T	.600 <T	-	-
SEP	1.400	1.400	-	-
OCT	.600 <T	NSS	-	-
NOV	.400 <T	.400 <T	-	-
DEC	1.000	.600 <T	-	-

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
VOLATILES				
BENZENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 5.0 (B1)
JAN	ISM	.100 <T	.	BDL
MAR	BDL	.050 <T	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
TOLUENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 24.0 (B4)
JAN	ISM	.150 UCS	.	.100 UCS
MAR	BDL	BDL	.	BDL
APR	BDL	.050 UCS	.	.050 UCS
MAY	BDL	BDL	.	.
JUN	.050 <T	.100 <T	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	.100 <T	.	.
ETHYLBENZENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 2.4 (B4)
JAN	ISM	.050 <T	.	BDL
MAR	BDL	.050 <T	.	BDL
APR	BDL	.050 <T	.	BDL
MAY	.100 <T	.100 <T	.	.
JUN	.050 <T	.050 <T	.	.100 <T
JUL	BDL	.050 <T	.	BDL
AUG	.100 <T	.100 <T	.	.050 <T
SEP	BDL	.050 <T	.	.050 <T
OCT	BDL	NSS	.	BDL
NOV	BDL	.050 <T	.	BDL
DEC	BDL	.100 <T	.	.
P-XYLENE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 300 (B4)
JAN	ISM	BDL	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
MAR	BDL	.100 <T	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
M-XYLENE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 300 (B4)
JAN	!SM	BDL	.	BDL
MAR	BDL	.000 RMP	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	.100 <T	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
O-XYLENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 300 (B4)
JAN	!SM	BDL	.	BDL
MAR	BDL	.050 <T	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	.050 <T	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
STYRENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 46.5 (D2)
OCT	.200 <T	NSS	.	.100 <T
NOV	.250 <T	.100 <T	.	BDL
DEC	BDL	.150 <T	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
METHYLENE CHLORIDE (UG/L)		DET'N LIMIT = .500		GUIDELINE = 1750 (D3)
JAN	ISM	BDL	.	2.000 <T
MAR	BDL	BDL	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
CHLOROFORM (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)
JAN	ISM	17.500	.	8.800
MAR	BDL	9.900	.	7.300
APR	BDL	6.200	.	7.900
MAY	BDL	BDL	.	.
JUN	BDL	9.400	.	9.300
JUL	BDL	7.900	.	7.700
AUG	.300 <T	8.200	.	6.600
SEP	.300 <T	7.200	.	9.200
OCT	BDL	NSS	.	5.800
NOV	.100 <T	11.700	.	11.200
DEC	.100 <T	6.100	.	.
CARBON TETRACHLORIDE (UG/L)		DET'N LIMIT = .200		GUIDELINE = 5.0 (D1)
JAN	ISM	BDL	.	BDL
MAR	BDL	BDL	.	BDL
APR	BDL	BDL	.	BDL
MAY	BDL	BDL	.	.
JUN	BDL	.600 <T	.	.200 <T
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	1.200 <T	.	.
DICHLOROBROMOMETHANE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 350 (A1+)
JAN	ISM	13.850	.	7.900
MAR	BDL	8.300	.	6.700

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
APR	BDL	6.100	.	6.800
MAY	BDL	5.800	.	.
JUN	BDL	8.200	.	8.450
JUL	BDL	7.150	.	6.800
AUG	BDL	7.600	.	7.100
SEP	BDL	7.950	.	9.800
OCT	BDL	NSS	.	6.500
NOV	BDL	9.500	.	9.100
DEC	BDL	6.400	.	.
CHLORODIBROMOMETHANE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)
JAN	ISM	11.200	.	5.800
MAR	BDL	6.400	.	6.400
APR	BDL	3.500	.	4.000
MAY	BDL	2.700	.	.
JUN	BDL	4.400	.	4.300
JUL	BDL	3.800	.	3.800
AUG	BDL	4.200	.	5.000
SEP	BDL	6.700	.	7.400
OCT	BDL	NSS	.	4.100
NOV	BDL	7.300	.	5.900
DEC	BDL	4.600	.	.
T-CHLOROETHYLENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 10.0 (C2)
JAN	ISM	BDL	.	BDL
MAR	BDL	BDL	.	BDL
APR	BDL	BDL	.	BDL
MAY	.100 <T	.	.	.
JUN	BDL	BDL	.	BDL
JUL	BDL	BDL	.	BDL
AUG	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
OCT	BDL	NSS	.	BDL
NOV	BDL	BDL	.	BDL
DEC	BDL	BDL	.	.
BROMOFORM (UG/L)		DET'N LIMIT = .200		GUIDELINE = 350 (A1+)
JAN	ISM	.600 <T	.	.600 <T
MAR	BDL	.400 <T	.	.400 <T
APR	BDL	.600 <T	.	.400 <T
MAY	BDL	.400 <T	.	.
JUN	BDL	.400 <T	.	.400 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM METRO TORONTO (R. L. CLARK WTP) 1988

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 1	
			STANDING	FREE FLOW
JUL	BDL	.600 <T	.	.400 <T
AUG	BDL	.600 <T	.	.600 <T
SEP	BDL	.800 <T	.	.800 <T
OCT	BDL	NSS	.	.600 <T
NOV	BDL	1.000 <T	.	1.000 <T
DEC	BDL	.600 <T	.	.
TOTL TRIHALOMETHANES (UG/L)		DET'N LIMIT = .500		GUIDELINE = 350 (A1)
JAN	ISH	43.150	.	23.100
MAR	BDL	25.000	.	20.800
APR	BDL	16.400	.	19.100
MAY	BDL	15.800	.	.
JUN	BDL	23.000	.	22.650
JUL	BDL	19.450	.	18.700
AUG	BDL	20.600	.	19.300
SEP	BDL	22.650	.	27.200
OCT	BDL	NSS	.	17.000
NOV	BDL	29.500	.	27.200
DEC	BDL	18.900	.	.

Table 6

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
P/A BOTTLE		0	0 (A1*)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	5000. (B1)
PENTACHLOROPHENOL	NG/L	50.	60000. (B1)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	°C	N/A	<15 °C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
NITRITE	MG/L	.001	1.0	(A1)
TOTAL NITRATES	MG/L	.02	10.	(A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A	
PH	DMSNLESS	N/A	6.5-8.5	(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A	
PHOSPHORUS TOTAL	MG/L	.002	.40	(F2)
TOTAL SOLIDS	MG/L	1.	500.	(A3)
TURBIDITY	FTU	.02	1.0	(A1)
METALS				
ALUMINUM	UG/L	.050	100.	(A4)
ANTIMONY	UG/L	.050	146.	(D4)
ARSENIC	UG/L	.050	50.	(A1)
BARIUM	UG/L	.020	1000.	(A1)
BORON	UG/L	.200	5000.	(A1)
BERYLLIUM	UG/L	.010	0.20	(H)
CADMIUM	UG/L	.050	5.0	(A1)
COBALT	UG/L	.020	1000.	(H)
CHROMIUM	UG/L	.100	50.	(A1)
COPPER	UG/L	.100	1000.	(A3)
IRON	UG/L	5.0	300.	(A3)
MERCURY	UG/L	.01	1.0	(A1)
MANGANESE	UG/L	.050	50.	(A3)
MOLYBDENUM	UG/L	.020	500.	(H)
NICKEL	UG/L	.100	50.	(F3)
LEAD	UG/L	.020	50.	(A1)
SELENIUM	UG/L	.200	10.	(A1)
SILVER	UG/L	.020	50.	(A1)
STRONTIUM	UG/L	.100	2000.	(H)
THALLIUM	UG/L	.010	13.	(D4)
TITANIUM	UG/L	.100	N/A	
URANIUM	UG/L	.020	20.	(A2)
VANADIUM	UG/L	.020	100.	(H)
ZINC	UG/L	.020	5000.	(A3)
PHENOLICS				
PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0	(A3)
PESTICIDES & PCB				
ALDRIN	NG/L	1.0	700.	(A1)
AMETRINE	NG/L	50.	300000.	(D3)
ATRAZINE	NG/L	50.	60000.	(B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	70[illegible]	(G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300.	(G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000.	(A1)
ALPHA CHLORDANE	NG/L	2.0	7000.	(A1)
GAMMA CHLORDANE	NG/L	2.0	7000.	(A1)
BLADEX	NG/L	100.	10000.	(B3)
DIELDRIN	NG/L	2.0	700.	(A1)
METHOXYCHLOR	NG/L	5.0	100000.	(A1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000.	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000.	(D4)
ENDRIN	NG/L	4.0	200.	(A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A	
HEPTACHLOR EPOXIDE	NG/L	1.0	3000.	(A1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)
POLYAROMATIC HYDROCARBONS				
PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0	N/A	
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	
PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	
SPECIFIC PESTICIDES				
TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	280000.	(B1)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	87000.	(B3)
PICHLORAM	NG/L	100.	2450000.	(D3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	14000.	(A1)
DICHLORVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION	NG/L	N/A	N/A	
MALATHION	NG/L	20.	160000.	(G)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(B3)
METHYLTRITHION	NG/L	20.	N/A	
PARATHION	NG/L	20.	35000.	(B1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
PHORATE (THIMET)	NG/L	20.	35. (D2)
RELDAN	NG/L	20.	N/A
RONNEL	NG/L	20.	N/A
AMINOCARB	NG/L	N/A	N/A
BENOMYL	NG/L	N/A	N/A
BUX (METALKAMATE)	NG/L	2000.	N/A
CARBOFURAN	NG/L	2000.	18000. (D3)
CICP (CHLORPROPHAM)	NG/L	2000.	350000. (G)
DIALLATE	NG/L	2000.	30000. (H)
EPTAM	NG/L	2000.	N/A
IPC	NG/L	2000.	N/A
PROPOXUR (BAYGON)	NG/L	2000.	90000. (G)
SEVIN (CARBARYL)	NG/L	200.	70000. (A1)
SUTAN (BUTYLATE)	NG/L	2000.	245000. (D3)
VOLATILES			
BENZENE	UG/L	.050	5.0 (B1)
TOLUENE	UG/L	.050	24.0 (B4)
ETHYLBENZENE	UG/L	.050	2.4 (B4)
PARA-XYLENE	UG/L	.100	300. (B4)
META-XYLENE	UG/L	.100	300. (B4)
ORTHO-XYLENE	UG/L	.050	300. (B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0 (D1)
ETHLYENE DIBROMIDE	UG/L	.05	50. (G)
METHYLENE CHLORIDE	UG/L	.500	1750. (D3)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	350. (D3)
1,1-DICHLOROETHANE	UG/L	.100	N/A
CHLOROFORM	UG/L	.100	350. (A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200. (D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0 (D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0 (D1)
1,2-DICHLOROPROPANE	UG/L	.050	10.0 (G)
TRICHLOROETHYLENE	UG/L	.100	5.0 (D1)
DICHLOROBROMOMETHANE	UG/L	.050	350. (A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350. (A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0 (C2)
BROMOFORM	UG/L	.200	350. (A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17(D4)
CHLOROBENZENE	UG/L	.100	1510. (D3)
1,4-DICHLOROBENZENE	UG/L	.100	5.0 (B1)
1,3-DICHLOROBENZENE	UG/L	.100	130. (G)
1,2-DICHLOROBENZENE	UG/L	.050	200. (B1)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A
TOTAL TRIHALOMETHANES	UG/L	.500	350. (A1)
STYRENE	UG/L	.05	46.5 (D2)